

ATOMIC ENERGY *newsletter*®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

Dear Sir:

May 31st, 1955
Vol. 13 ... No. 8

A patent on the first nuclear reactor has now been issued by the U.S. Patent Office for the work done by the late Enrico Fermi and Leo Szilard, of the University of Chicago, on achieving their first self-sustaining chain reaction. The basic invention is assigned to the U. S. Government. For some years in the secret category, disclosure of the invention was made publicly last fortnight. (PATENTS, p. 5.)

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Recently shown at the radio parts show in Chicago were two manufacturers' new lines of radiation detection instruments. Radio Corp. of America showed type WF-10A, using type 1B85 Geiger tube (\$119.50); type WF-11A using 6306 bismuth tube (\$154.50); type WF-12A using 1B85 and including an external probe (\$149.50); type WF-14A using 6306 tube and with probe (\$186); type WF-15A using ten type 1B85 tubes (\$450); and type WF-16A using 10 type 6306 tubes (\$750). Philmore Manufacturing Co., New York, showed its type GC-111 detection instrument (\$89.50) and a more sensitive instrument type GC-112 (\$119.50). Other instruments of Philmore shown included models at \$29.95, \$19.95 and \$15.95. (PRODUCTS, PROCESSES, p. 4 this LETTER.)

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The new electric utility, using a nuclear reactor as a heat source, which is being erected by the Consolidated Edison Co., near New York City, is an approach to lowering its costs of generating electrical energy, H. R. Searing, president of Con Edison, recently told that company's annual meeting.

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ATOMIC ENERGY BUSINESS REPORTS...

NEW CONSULTING SERVICE IN ATOMIC ENERGY FIELD IS OFFERED:- A new management consulting service for industrial and financial groups interested in atomic energy is now being offered by Arthur D. Little, Inc., Cambridge, consulting and research firm. Two of the company's leading clients in this new service are the First National Bank, and Mutual Life Insurance Co., both of New York. Under this new service, Little will furnish banking and investment houses, and industry, with technical-economic advisory services on which they may base their financial operations in atomic energy. This new Little service is in addition to its present consulting services on the research and technical level. As first steps in initiating this new service, Little will expand its current continuing survey on the growth trends and economic impact of atomic energy which includes detailed investigations of industrial opportunities, evaluations of new technological developments, and forecasts of future trends.

NUCLEAR REACTOR FOR TESTING PURPOSES PLANNED FOR CALIFORNIA:- Preliminary designs and cost studies have now been completed by Stanford Research Institute, Stanford, Calif., for a test nuclear reactor which it hopes to establish in that state. The design permits simultaneous conduct of a large number of industrial projects. Use in university and medical research programs is also contemplated. Both light and heavy-water designs were considered by the Stanford staff and the three industrial nuclear engineering organizations which worked on the project. Estimates show "moderate cost for a 10,000 kw. reactor having fluxes comparable to the USAEC's material testing reactor" a Stanford spokesman stated.

REACTOR FOR MIDWEST ELECTRIC UTILITY IS DUAL-CYCLE BOILING WATER TYPE:- Under General Electric Co.'s \$45 million contract with Nuclear Power Group, Inc., the dual-cycle boiling water reactor that will be installed by G-E in the electric utility of Nuclear Power represents a "major advance in the economic generation of electricity from nuclear energy", a G-E spokesman has asserted. (Nuclear Power Group, an organization of midwest electric utilities, is constructing the nuclear power plant in Grundy County, Ill.; this LETTER 5/17/55, p. 3) Advantages of the dual-cycle reactor, according to G-E, include its ability to meet power demand changes without delay; a self-stabilizing power level to match load variations; good thermal efficiency for a given reactor temperature; primary loop pressure essentially the same as turbine pressure; and a high degree of inherent safety due to boiling in the reactor. Generating capacity of the Illinois plant will be 180,000 kw., making it the largest all-nuclear station yet scheduled.

SECOND NUCLEAR-POWERED SUBMARINE TO BE LAUNCHED THIS SUMMER:- Now nearing completion, the U. S. Navy's second nuclear-reactor-powered submarine, the Seawolf, will be launched this July from the ways of the Electric Boat Div. of General Dynamics Corp., Groton, Conn., the Navy has now stated. (The launching of the Seawolf will follow that of the Nautilus, first such nuclear reactor powered craft, by about 18-months.) The Seawolf uses an intermediate neutron reactor with liquid metal coolant, furnished by General Electric Co., under a USAEC contract. Westinghouse Electric had furnished the thermal reactor for the Nautilus. The Navy's share of the Seawolf's cost is estimated by the Bureau of Ships at \$32,700,000 compared with the \$29,000,000 for the Nautilus. In addition, the USAEC-contract work covering the reactors and associated equipment added approximately \$25,000,000 to these costs. The Navy said that the Seawolf, like the Nautilus, would be capable of travelling while submerged at speeds "in excess" of twenty knots and would be capable of "prolonged submerged operations".

ATOMIC TRADE ASSOCIATION CONSIDERS NUCLEAR BUSINESS PROBLEMS:- A two day session held last week in New York by the Atomic Industrial Forum, Inc., N.Y. association of firms interested in nuclear work, heard a variety of papers dealing with both economic and technical aspects of nuclear activity. While components and fuels for nuclear reactors occupied two panel sessions, licensing, world markets, research, and insurance were covered in other sessions in their relation to nuclear work. The Forum will make the proceedings available under the session's title: Atomic Energy, A Realistic Appraisal.

ATOMIC ENERGY FINANCIAL REPORTS...

INVESTMENT TRUST MAKES PORTFOLIO CHANGES:- Reflecting the changes in investment opportunities in the atomic field, a number of additions and deletions have been made in the portfolio of the Atomic Development Mutual Fund, an analysis of its first quarter holdings for this year reveals. New additions include 27,000 shares of Beaver Lodge Oil Corp. (Dallas); 1,000 shares of Food Machinery & Chemical Co.; 3,400 shares of Tennessee Corp.; 20 shares of Climax Uranium Co.; 500 shares of New Jersey Zinc Co.; and 14,000 shares of Peach Uranium and Metal Mining, Ltd. Eliminated were Rexspar Uranium and Metals Mining, Ltd.; Kentucky-Utah Mining Co.; International Minerals & Chemical Corp.; and Panellit, Inc.

ANALYSES AVAILABLE:- A memorandum is available from R. W. Pressprich & Co., 48 Wall St., NYC, entitled "A Primer on Atomic Energy"..... A review of ACF Industries may be obtained from Eastman, Dillon & Co., 15 Broad St., NYC.

RAW MATERIALS...prospecting, mining & marketing...

UNITED STATES:- Shipments of uranium ore by Continental Uranium, Inc., during the first quarter of this year were up some 24.8% over the last quarter of 1954, the firm has now reported. Gross value of the ores, which were shipped during a bad weather period, amounted to \$400,820..... Some 1500 claims have been acquired by Arco Uranium Corp., as a result of its taking over the assets of Zion Uranium Corp., and Amalgamated Uranium. Arco now has potentially valuable acreage in major producing areas of the Colorado Plateau..... Holly Uranium Corp. (57% owned by Holly Corp., an oil and gas producing firm) has reported profitable operations from its two New Mexico producing mines. Holly Uranium recently made a public offering of some 900,000 shares at \$3.50 per share.

CANADA:- At Lake Cinch Mines, in the Beaverlodge area, drilling has shown "promising indications", management has now reported. Lake Cinch is controlled by Violomac Mines..... Considerable drilling activity is now centering on the Bancroft-Halliburton area where four companies are now working underground. Large orebodies have been reported here by such companies as Faraday, Rare Earth, Bicroft, Blue Rock Cerium, and Dyno Mines. Faraday has reported that on the basis of underground work it has completed to date it has a potential of about 1,200 tons per vertical foot in six separate ore shoots. It has also reported an average grade for these ores of 0.205% uranium oxide. At Rare Earth Mining Corp., a full scale underground program is now underway, with a three compartment production sized shaft going down to a 500-ft. objective..... Diamond drilling is to get underway shortly at the 36 claim Algoma Camp property of Spanish American Mines, Ltd., company officials have now stated. It will be the beginning of a 25,000-ft., 4 machine, drilling program.

CONFERENCES & COURSES...on nuclear subjects...

COURSES:- Courses in nuclear engineering are being started this Summer at the University of Texas, by the chemical engineering department. Two courses will be taught this summer by H. S. Isbin, of the University of Minnesota: Nuclear Reactor Theory and Design, a graduate course, and Nuclear Engineering, a senior study.

A one week special summer program on Ionizing Radiation for Industrial Processing is being held by Massachusetts Institute of Technology from June 20-24. Further information may be obtained from the M.I.T. Summer session office, Cambridge, Mass.

A one month Summer course on Industrial Nuclear Reactors is being given by the research reactor staff of the school of engineering, North Carolina State College, Raleigh, N.C. The course is designed for graduate engineers now employed by industrial firms. Enquiries should be made to A. C. Menius, Jr., at the College.

A new graduate program has now been inaugurated by the University of Pittsburgh and Westinghouse Electric Corp., leading to a doctorate. Under the program, the graduate student will work for Westinghouse, in its atomic power division, at regular industry-scale salary, and attend the University of Pittsburgh on both part-time and full-time basis, for four academic years.

CONFERENCES:- The Governors of the 48 States have been invited by the USAEC to have their representatives attend a conference to discuss plans for regulating the activities of private nuclear operations, and to consider the health and safety features of these plans.

NEW PRODUCTS, PROCESSES & SERVICES...for nuclear work...

PRODUCTS FROM MANUFACTURERS:- Single channel scintillation spectrometer, model 513, is a complete system designed for precision analysis of various gamma-emitting radioisotopes, whether they occur singly or in mixtures or compounds. The model 513 assembly includes an external bench-type well scintillation detector and an equipment cabinet housing a shielded linear amplifier, differential pulse height analyzer, pre-set time scaler, and scintillation high voltage supply. --Atomic Instrument Co., Cambridge 39, Mass.

Cetyl-C-14 alcohol and stearyl-1-C-14 alcohol are two new carbon-14 compounds added to this processor's list of such radioactive products. This is the first time these long-chain fatty alcohols in labelled form are obtainable from a commercial source. Since tagged detergents can be synthesized from them as intermediates, they may be useful in industrial laboratories studying detergents, detergency, or liquid-liquid partition. The compounds are available in 1, 0.5, and 0.1 millicurie package sizes. --Nuclear Instrument & Chemical Corp., Chicago 10, Ill.

Mercury pulse generator, model M-60, is an instrument which provides a range of 10 microvolts to 100 volts negative or positive pulses, has fast rise times, and decay time constants of 1, 10 or 100 microseconds. --Radiation Instrument Development Laboratory, Chicago 36, Ill.

PRODUCTS SUPPLIED BY MANUFACTURERS:- A 1 kw. tubeless magnetic amplifier regulated power supply, furnishing 120-v. at 8.5 amps., has been supplied the nuclear-reactor-powered submarine "Nautilus" by Perkin Engineering Corp., El Segundo, Calif. The power supply operates on the 440-v., 60-cycle system used in the submarine.

A 1 million electron-volt Van de Graaff accelerator has now been sold by High Voltage Engineering Corp., Cambridge, Mass., to Bell Telephone Laboratories, New York. The instrument will be used by Bell Labs in a program which will include electron bombardment of solids.

PRODUCT RESEARCH:- The research work in the laboratory of Bausch & Lomb Optical Co., on irradiation damage to glass, which has been conducted under a USAEC physical research contract, is being continued by that firm under a renewal of the contract. The renewal provides that the USAEC will contribute \$10,000 toward the cost of the research, for one year.

PRODUCT LITERATURE:- Reactor components, transfer and storage casks, decontamination cells, radiation shielding, and controlled manipulation equipment are described in Bulletin No. 274 of Farrell-Birmingham Co., Inc., 25 Main St., Ansonia, Conn.

A sprayable vinyl plastic coating ("Cocoon"), and its suggested uses in areas where radioactive materials are used, is described in a bulletin available from R. M. Hollingshead Corp., 840 Cooper St., Camden, N. J.

An 8-page brochure discussing this manufacturer's DS-7 scintillation counting system for aerial or ground surveying for oil or uranium deposits may be obtained from Nuclear Instrument & Chemical Corp., 229 W. Erie St., Chicago 10, Ill.

NEW BOOKS & OTHER PUBLICATIONS...in the nuclear field...

Technical Supplement to The Bomb, Survival and You, by Fred N. Severud and Kurt Bernhard. A mathematical analysis of the effect of blast loadings of structures. (The main volume of this book, of which the supplement is a part, explains, from an engineering standpoint, how structures can be strengthened to withstand atomic blast, how people can find safety, and how building equipment can be protected.) --Reinhold Publishing Corp., New York, N.Y. (Supplement: \$2.50. Main volume: \$5.95.)

Quartz-fibre Dosimeters and Charging Units, by F.B. Whiting, Atomic Energy Research Establishment (Eng.) 20 pages. (75¢)..... Report of Proceedings of Liquid Metal Utilization Conference, held by AERE, on May 16, 1953. 131 pages. (\$4.50)..... Actinium, a Bibliography; 1906-1953. By R. W. Clarke, AERE. 25 pages. (\$1.00). --British Information Services, New York 20, N.Y.

Geiger Counter Technique, by H. Friedman. Work done at U. S. Naval Research Laboratory. (Microfilm: \$3.75.) --Library of Congress, Publication Bd. Proj., Wash. 25, D. C.

ATOMIC PATENT DIGEST...new issues in the nuclear field...

To Private Concerns:- Radioactive monokinetic charged particle generators. Apparatus comprising (in part) a source of charged particles, accelerating means for these charged particles, and means for utilizing particles produced by the source after acceleration, U. S. Pat. No. 2,709,229 issued May 24, 1955; assigned to Radio Corp. of America, New York. (Inventor: E. G. Linder.)

Radiation dosimeter. A radiation responsive system comprising (in part) in combination, a cell, and an electrical device responsive to the output of the cell; this cell comprising an anode and a cathode of electrochemically dissimilar elements, and a normally un-ionized chloroform-water mixture interposed between and in contact with the anode and the cathode. U. S. Pat. No. 2,708,242 issued May 10, 1955, to Samuel Ruben, New Rochelle, N.Y.

To Government Agencies:- Apparatus for automatically sorting beryllium ore particles according to their beryllium content. Comprises (in part) a source of gamma radiation in excess of 1.63 million electron volts adapted to produce a beam of gamma rays; means for passing ore particles singly through this beam; and means for neutron detection located proximately to the point at which the particles pass through the beam. A neutron moderating medium is located between this point and the detector, with means for changing the path of the particles through the beam in response to the detection of neutrons emitted from the particles. U. S. Pat. No. 2,707,555 issued May 3, 1955; assigned to United States of America (USAEC). (Inventor: A.M. Gaudin)

Measurement and control of flowing streams of fluid mixtures. The method of producing a continuously flowing stream of substantially constant predetermined composition composed of a mixture of two or more mutually miscible fluid components, having different densities. U. S. Pat. No. 2,707,964 issued May 10, 1955; assigned to United States of America (USAEC). (Inventor: P. S. Monroe.)

Camera timer. Includes means for presenting a phenomenon in visual form for photography; means for adjusting the rate at which this phenomenon is presented for photography; a camera; means in the camera for adjusting the camera to take pictures at a pre-determined rate; and associated mechanical equipment. U. S. Pat. No. 2,708,148 issued May 10, 1955; assigned to United States of America (USAEC). (Inventor: M. R. Clark.)

Purification of ammonium beryllium fluoride solutions. A process (in part) of substantially diminishing the amount of chromium impurities contained in an ammonium beryllium fluoride solution which comprises adding lead oxide to it, boiling the resulting slurry, and then removing the precipitate from it. U. S. Pat. No. 2,708,618 issued May 17, 1955; assigned to United States of America (USAEC). (Inventor: C.W. Schwenzfeier, Jr.)

Nuclear reactor. A reactor which comprises (in part) a moderator of graphite and natural uranium rods disposed in a geometric pattern therein, the purity of the graphite and the uranium and the total mass thereof being sufficient to sustain a chain reaction. U. S. Pat. No. 2,708,656 issued May 17, 1955; assigned to United States of America (USAEC). (Inventors: Enrico Fermi and Leo Szilard.)

Methods of and apparatus for separating materials. A calutron comprising (in part) means for establishing a magnetic field having a predetermined flux direction, a vacuum envelope within this field, an accelerator mechanism within this envelope, the mechanism having a linear effective edge, and external means for moving this mechanism to rotate this edge angularly with respect to this flux direction. U. S. Pat. No. 2,709,222 issued May 24, 1955; assigned to United States of America (USAEC). (Inventor: Ernest O. Lawrence.)

PEOPLE...in the atomic energy field...

Dr. Bernard Kopelman has now been appointed chief engineer of the Atomic Energy Division of Sylvania Electric Products, Inc. In this new position he will be responsible for all technical operations, including research and development of nuclear fuel elements and reactor components.

Sincerely,

The Staff,
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